CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

ORDER NO. 87-039

SITE CLEANUP REQUIREMENTS FOR:

VARIAN ASSOCIATES
601 CALIFORNIA AVENUE
PALO ALTO
SANTA CLARA COUNTY

STANFORD UNIVERSITY
PALO ALTO
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board), finds that:

1. Varian Associates manufactures electronic components at a site located at 601 California Avenue, Palo Alto, Santa Clara County. The site is leased from Stanford University the current owner of the site. (Varian Associates and Stanford University are hereinafter referred to as the dischargers)

2. The site consists of two main buildings as shown on Attachment 1, Site Plan, hereinafter a part of this Order. The complex houses research and production facilities associated with Varian Associates Image Tube Division.

3. The site is located on a series of overlapping alluvial fans deposited by east-flowing streams along the edge of the foothills of the Santa Cruz Mountains west of the site. The land has been leased by Varian since 1966.

4. The subsurface soil and groundwater at this site are polluted with organic solvents believed to have orginiated from past activities at solvent storage and use areas. Eight monitoring wells constructed on site in 1986 have detected trichloroethylene (TCE), 1,1,1-trichloroethane (TCA), 1,1-dichloroethylene (DCE), 1,1-dichloroethane (DCA). Concentrations of TCE up to 24,000 ppb were detected in a well near an area where TCE and other solvents were formerly stored. It is the intent of this Order to hold the named dischargers responsible only to the extent that they caused the pollution described herein.

5. The site is underlain by primarily continuous interbeds of unconsolidated clayey to silty sand and sandy clays. The uppermost saturated zone was encountered at approximately 17 to 20 feet deep. The groundwater gradient in this zone is northeast toward the San Francisco Bay.

6. There are four backup municipal wells and several private wells downgradient from this site. The closest municipal well is approximately 1/2 mile to the northeast and the closest private well is approximately

1 1/4 mile to the northeast. The municipal wells were sampled in April 1985 and found to have non-detectable levels of pollutants. Three of the private wells closest to this site in the downgradient direction were sampled in the fall 1985 and contained non-detectable levels of pollutants.

7. Varian submitted a proposal to further define the extent of soil and groundwater pollution to the Regional Board staff on January 16, 1987. The plan, which has been approved by staff, includes the following:

    a. Further determination of the lateral extent of pollution using soil-gas monitoring off-site and subsequent installation of groundwater monitoring wells.

    b. Determination of vertical extent of pollution by constructing additional wells to the next deeper saturated zone.

    c. Monitoring well water elevations monthly for at least the next six months and quarterly monitoring of the ground water for pollutants.

8. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on July 21, 1982. The Basin Plan contains water quality objectives for South San Francisco Bay and contiguous surface and groundwaters.

9. The existing and potential beneficial uses of the ground water underlying and adjacent to the facility include:
    a. Industrial process water supply
    b. Industrial service supply
    c. Municipal and domestic supply
    d. Agricultural supply

10. The dischargers are believed to have caused or permitted waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.

11. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

12. The Board has notified the discharger and all interested agencies and persons of its intent under California Water Code Section 13304 to proscribe Site Cleanup Requirements for the discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

13. The Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the dischargers shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS:

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect beneficial uses of the waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS:

1. The storage, handling, treatment or disposal of polluted soil or groundwater shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The dischargers shall conduct monitoring activities as needed to define the local hydrogeolocical conditions, and the lateral and vertical extent of the soil and groundwater pollution. Should monitoring results show evidence of plume migration additional plume characterization of pollutant extent shall be required.

C. PROVISIONS:

1. The dischargers shall submit to the Board acceptable monitoring program reports containing results of work performed according to a program prescribed by the Board's Executive Officer.

2. The dischargers shall comply with Prohibitions A.1., A.2., and A.3., and Specifications B.1. and B.2. above, in accordance with the following time schedule and tasks:

COMPLETION DATE/TASK:

a. 1) COMPLETION DATE: May 15, 1987

TASK: **IDENTIFY SOURCES AND CHARACTERIZE SOIL POLLUTION:** Submit a technical report acceptable to the Executive Officer containing a proposal to identify all pollution sources onsite and to define the horizontal and vertical extent of soil pollution onsite.

2) COMPLETION DATE: August 3, 1987

TASK: **COMPLETION OF IDENTIFICATION AND CHARACTERIZATION:** Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 2.a.1).

b. 1) COMPLETION DATE: May 15, 1987

TASK: **GROUNDWATER POLLUTION CHARACTERIZATION:** If the extent of groundwater pollution is not defined based on completing the tasks contained in the February 18, 1987 proposal as modified by staff comments submit a technical report acceptable to the Executive Officer containing a proposal to completely define the horizontal andvertical extent of the groundwater pollution.

2) COMPLETION DATE: August 3, 1987

TASK: **COMPLETION OF GROUNDWATER CHARACTERIZATION:** Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 2.b.1).

c. 1) COMPLETION DATE: April 15, 1987

TASK: **INTERIM SOURCE REMEDIAL ACTIONS FOR GROUNDWATER:** Submit a technical report acceptable to the Executive Officer which contains an evaluation of interim remedial alternatives, a recommended plan for interim remediation onsite, and an implementation time schedule. This report shall evaluate alternative hydraulic control systems to contain and to initiate cleanup of polluted groundwater; and include a completed NPDES application to discharge to surface waters, if such discharge is an element of the plan.

2) COMPLETION DATE: August 31, 1987

TASK:**COMPLETION OF INTERIM REMEDIAL ACTIONS FOR GROUNDWATER:** Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 2.c.1).

3) COMPLETION DATE: August 3, 1987

TASK:**INTERIM SOURCE REMEDIAL ACTIONS FOR SOIL:** Submit a technical report acceptable to the Executive

Officer which contains an evaluation of interim remedial alternatives, a recommended plan for interim remediation onsite, and an implementation time schedule. This report shall evaluate the removal and/or cleanup of polluted soils.

4) COMPLETION DATE: December 18, 1987

TASK: **COMPLETION OF INTERIM REMEDIAL ACTION FOR SOIL:** Submit a technical report acceptable to the Executive Officer documenting completion of the tasks needed to implement soil remediation as identified in the technical report submitted for Task 2.c.3).

d. 1) COMPLETION DATE: September 18, 1987

TASK: **OFFSITE INTERIM REMEDIAL ACTIONS:** Submit a technical report acceptable to the Executive officer which contains an evaluation of interim remedial alternatives, and an implementation time schedule. This report shall evaluate alternative hydraulic control systems to contain and to initiate cleanup of polluted groundwater offsite; and include a completed NPDES application to discharge to surface waters, if such discharge is an element of the plan.

2) COMPLETION DATE: February 18, 1988

TASK: **COMPLETION OF INTERIM REMEDIAL ACTIONS:** Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 2.d.1).

e. 1) COMPLETION DATE: September 15, 1988

TASK: a) **EVALUATE INTERIM HYDRAULIC CONTAINMENT AND SOIL REMOVAL MEASURES:** Submit a technical report acceptable to the Executive Officer which evaluates the effectiveness of the interim onsite hydraulic containment system. Such an evaluation shall include, but need not be limited to, an estimation of the flow capture zone of the extraction wells, establishment of the cones of depression by field measurements, and presentation of chemical monitoring data, if extraction wells are proposed. This report shall also evaluate and document the removal and/or cleanup of polluted soils, if such removal and/or cleanup is an element of the remedial measures.

b) **MODIFICATION TO INTERIM ACTIONS:** Specific modifications to the system and an implementation time schedule shall be proposed in the event that the soil remediation or hydraulic control system is demonstrated not to be effective in containing and removing the onsite pollutants.

f. 1) COMPLETION DATE: February 1, 1989

TASK: **PROPOSED FINAL CLEANUP OBJECTIVES AND ACTIONS:** Submit a technical report acceptable to the Executive Officer containing the results of the remedial investigation; an evaluation of the installed interim remedial measures; a feasibility study evaluating alternative final remedial measures; the recommended measures necessary to achieve final cleanup objectives; and the tasks and time schedule necessary to implement the recommended final remedial measures.

3. The submittal of technical reports evaluating immediate, interim and final remedial measures will include a projection of the cost, effectiveness, benefits, and impact on public health, welfare, and environment of each alternative measure. The remedial investigation and feasibility study shall be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300); Section 25356.1 (c) of the California Health and Safety Code; CERCLA guidance documents with reference to Remedial Investigation, Feasibility Studies, and Removal Actions; and the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California".

4. If the dischargers are delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the dischargers shall promptly notify the Executive Officer and the Board may consider revision to this Order.

5. Technical reports on compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted monthly to the Board commencing on April 15, 1987 and covering the previous month. On a monthly basis thereafter, these reports shall consist of a letter report that, (1) summarizes work completed since submittal of the previous report, and work projected to be completed by the time of the next report, (2) identifies any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles, and (3) includes, in the event of non-compliance with Provision C.2. or any other Specification or Provision of this Order, written notification which clarifies the reasons for non-compliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order.

On a quarterly basis, commencing with the report due August 15, 1987 the monthly reports shall include, but need not be limited to, updated water table and piezometric surface maps for all affected water bearing zones, cross-sectional geological maps describing the hydrogeological setting of the site, and appropriately scaled and

hydrogeological setting of the site, and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying adjacent facilities and structures.

6. The discharger shall submit to the Board according to the schedule shown below technical reports acceptable to the Executive Officer containing Quality Assurance Project Plans, Site Safety Plans, and Site Sampling Plans. The Quality Assurance Project Plans, Site Safety Plans, and Site Sampling Plans format and contents shall be consistent with] CERCIA regulations and guidance documents.

Technical Report	Date Due
a. Quality Assurance Project Plan	May 15, 1987
b. Site Sampling Plan	(Required for all tech-
c. Site Safety Plan	nical reports contain-
	ing proposals)

7. Submit Site Sampling Plan and Site Safety Plan for Self-Monitoring Program on May 15, 1987.

8. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist or professional engineer.

9. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

10. The dischargers shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

11. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:

    a. Santa Clara Valley Water District
    b. Santa Clara County Health Department
    c. City of Palo Alto
    d. State Department of Health Services/TSCD
    e. State Water Resources Control Board
    f. U. S. Environmental Protection Agency, Region IX

    The Executive Officer may additionally require copies of correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order to be provided to the U.S. Environmental Protection Agency, Region IX, and to a local repository for public use.

12. The dischargers shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California

a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

b. Access to copy any records required to be kept under the terms and conditions of this Order.

c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

13. The discharger(s) shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order.

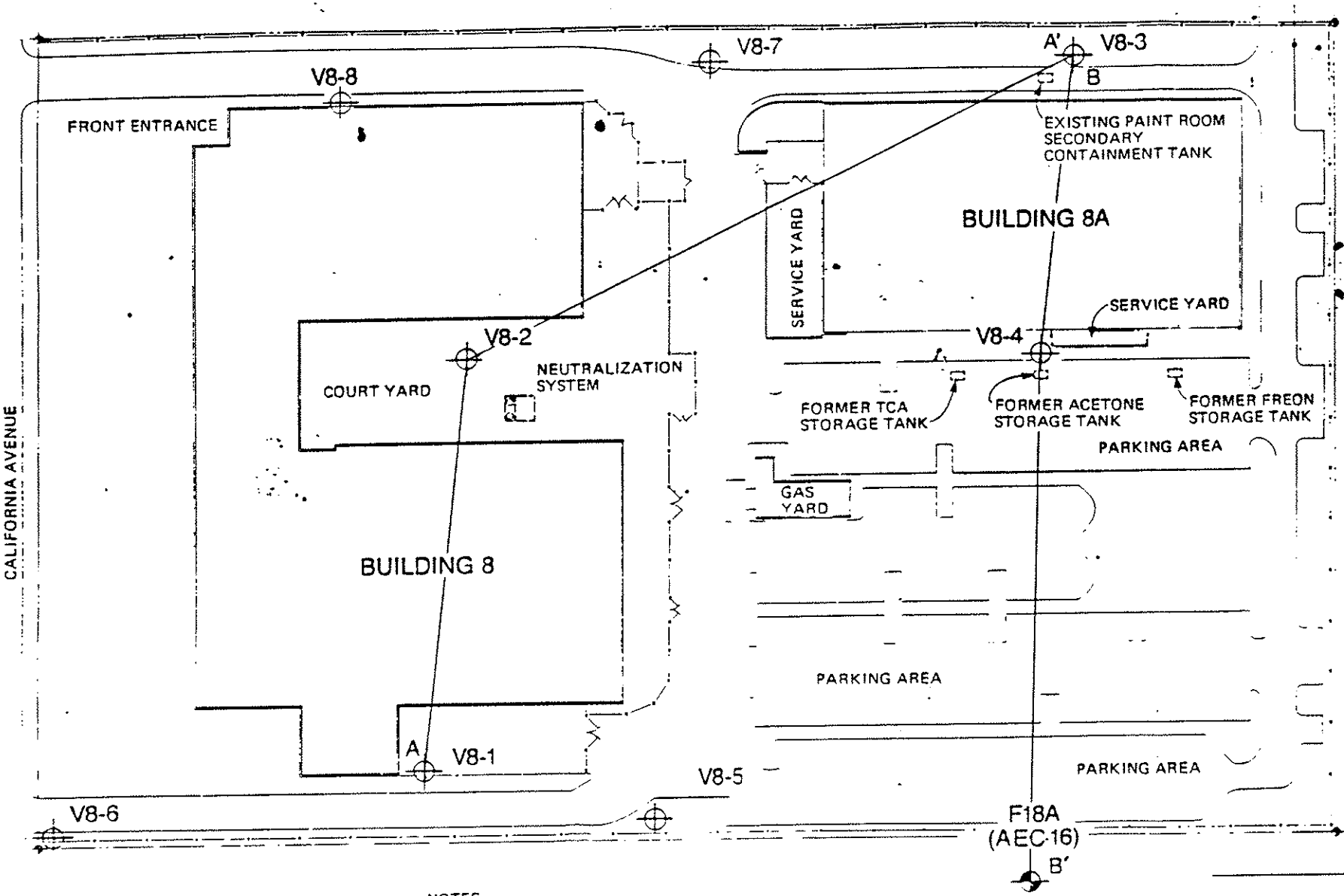
14. If any hazardous substance is discharged in or on any waters of the state, or discharged and deposited where it is, or probably will be discharged in or on any waters of the state, the discharger shall report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.

15. The Board will review this Order periodically and may revise the requirements when necessary.

I, Roger B. James, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on April 15, 1987.

for
Roger B. James

Executive Officer



LEGEND

- VARIAN MONITORING WELL
- MONITORING WELL BY OTHERS
- DENOTES LINE OF SECTION

NOTES

1. ALL LOCATIONS APPPOXIMATE
2. CHEMICAL TANK LOCATIONS BASED ON VARIAN DWG. X 4 4 PLUMBING PLOT PLAN

Kennedy/Jenks/Chilton

Varian Associates

Cross Section Location

December

Figure 3

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

VARIAN ASSOCIATES
601 CALIFORNIA AVENUE
PALO ALTO, SANTA CLARA COUNTY

STANFORD UNIVERSITY
PALO ALTO, SANTA CLARA COUNTY

ORDER NO. 87-039

CONSISTS OF

PART A, Dec. 1986
modified Jan. 1987

and

PART B, Adopted April 15, 1987

PART B

VARIAN ASSOCIATES
PALO ALTO, SANTA CLARA COUNTY

I. DESCRIPTION OF SAMPLING STATIONS

A.

Stations	Description
V8-1 through V8-8 and additional wells as appropriate.	Groundwater monitoring wells.

II. MISCELLANEOUS REPORTING. None.

III. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis shall be that given in Table I (attached).

IV. MODIFICATIONS TO PART A.

All items of Self Monitoring Program Part A, dated December 1986 and as modified January 1987 shall be complied with except for the following:

A. Additions:

F.4.
"4. Total quarterly volume of spent activated carbon (in cubic feet) from each treatment unit and the disposal site location."

B. Deletions:

SPECIFICATIONS FOR SAMPLING AND ANALYSES (Section D)

STANDARD OBSERVATIONS (Section E)

C. Modifications: NONE

I, Roger B. James, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 87-039.

2. Was adopted by the Board on April 15, 1987.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer or Regional Board.

for ROGER B. JAMES
Executive Officer

Attachments: Table I

TABLE 1
SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station	V8-1	V8-2	V8-3	V8-4	V8-5	V8-6	V8-7	V8-8
TYPE OF SAMPLE	G	G	G	G	G	G	G	G
Flow Rate (gal/day)								
pH (units)								
Temperature (C)								
EPA 601/602 for:	Q	Q	Q	Q	Q	Q	Q	Q
Carbon Tetrachloride								
Chlorobenzene								
Chloroform								
1,1-Dichloroethane								
1,2-Dichloroethane								
1,1-Dichloroethene								
trans-1,2-Dichloroethene								
trans-1,3-Dichloropropene								
Tetrachloroethene								
Toluene								
1,1,1-Trichloroethane								
Trichloroethene								
Vinyl Chloride								
GC/MS Scan (EPA 624)	1/Y	1/Y	1/Y	1/Y	1/Y	1/Y	1/Y	1/Y
Toxicity								

LEGEND FOR TABLE

G = grab sample
D = once each day
M = once each month
Q = quarterly, once in March, June, September and December
M/Q = monthly for three months at startup of operation; reduced to quarterly thereafter
2/Y = once in March and once in September
1/Y = once per year